Commonwealth of Massachusetts
Department of Telecommunications and Energy

First Set of Information Requests
NSTAR Gas Company, D.T.E. 02-12

Introduction:

The following questions refer to NSTAR Gas Company's ("NSTAR" or "Company") Filing ("Filling") regarding the Company's Load Forecast and Resource Plan for the period 2001/02 through 2005/06 in D.T.E. 02-12.

D.T.E. 1-1   Please refer to p. 12, and also to Table III-1, Table III-2, Table III-3 and Table III-4 of the Company's filing. It is stated that the Company has utilized the Effective Degree Days ("EDDs") data for all weather-related planning. Please indicate the source of weather data that the Company used and discuss the appropriateness of those data to the Company's service territory.

D.T.E. 1-2   Please refer to p. 18 of the Navigant Report (attachment 3 of the Company's filing). It states that the Worcester EDD data are used for both Worcester and Framingham divisions. In this regard:
(a)   please, discuss how the Company reached the conclusion that the EDD data of Worcester division can be used for Framingham division;
(b)   please, test for the difference in means and standards deviation of the Worcester distribution and Framingham distribution for every of the 45-winter season EDD databases.

D.T.E. 1-3   Please discuss the rationale for selecting the three winter design standard cases: 1:33 (base case), 1:50 (high case) and 1:25 (low case) out of the range of appropriate design standards, from 1:25 year to 1:100 years (see p. ES-I, ES-II of the NCI Report in attachment 3 of the Company's filing).

D.T.E. 1-4   The Company uses the same normal year EDD distribution for both Worcester and Framingham divisions (see p. 14 and Table III-2 of the Company's filing). Please, explain the divergences found on EDDs used by the Company in its forecast demand for Worcester and Framingham (7185 EDD and 6663 EDD, respectively) (see Table A.1 in attachment 3 of the Company's filing).

D.T.E. 1-5   Please justify the 45-year period used by the Company to develop the normal and design planning standards (see p. 12 and p. 14 of the Company's filing). Indicate why a 25 or 35 year period is not more appropriate. Also, please provide a chart with average monthly temperatures for each heating season for the past 45 years.

D.T.E. 1-6   Please discuss how the Company calculates the "Heat Factors Relating Demand

to EDDs by area and month" (see p. 5, Exhibit 1 of the Navigant Report in attachment 3 of the Company's filing).

D.T.E. 1-7   Please define "cost of relighting residential and small commercial customers" (see p.7 of the NCI Report, attachment 3 of the Company's filing).

D.T.E. 1-8   Please refer to p. 7 of the NCI Report (attachment 3 of the Company's filing). In connection with the costs of daily shortages of gas, it is stated that NCI used the updated NSTAR Gas relighting cost estimate of $30.50/customer and used the same ratio as NERA to come up with an estimate of Dth relighting cost of $21.78/Dth for   . In this regard,
(a)   please discuss and present the Company's calculation to come out with the updated lighting cost estimate;
(b)   please discuss and present the ratio used to compute the Dth relighting cost estimate.

D.T.E. 1-9   Please refer to Exhibit 5 "NSTAR Gas Summary of Costs of Daily Shortages of Gas" and Exhibit 6 "NSTAR Gas Summary of Estimated Incremental Costs of Seasonal Shortages"(see p. 8 of the NDI Report, attachment 3 of the Company's filing). Please, explain and present in detail how the customer losses (low end and high end) were calculated in both cases.

D.T.E. 1-10   Please refer to p. 9 and Figure 1 of the NCI Report, attachment 3 of the Company's filing. Please explain and present the performed calculation used to compute the distribution for seasonal MDth. In particular:
(a)   does Figure 1 refer to the four division of the Company?;
(b)   please, clarify how the 20 data points (20 heat factors relating demand to EDDs by area and month from Exhibit 1) were combined with data from Exhibit 2 to come out with the NSTAR gas distribution of design winter.

D.T.E. 1-11   Please refer to Exhibit 15 on p. 26 of the NCI Report of the Company's filing. Please discuss why the total fixed cost FSO in a normal year does not change for scenario 1 and scenario 3 and for the first year forecasted.

D.T.E. 1-12   Based on the NCI Report, the Company proposes the change of the existing design-winter planning standard of 1:50 to 1:33 years (see p. 24 of the Company's filing). The Company states two reasons to support that change. First, the minimum differences in the average cost of gas for each of the portfolios under normal conditions (see p. 32 of the NCI Report) and second, the several non-quantifiable issues such as current market conditions in the New England gas market (see p. 27 through p. 29 of the NCI Report). On the same grounds, please explain in detail why the Company ruled out scenario 3, the low design case of 1:25 years, as a proposed design-winter planning standard (see Exhibit 15 of the NCI Report.

D.T.E. 1-13   Please describe the level of training, technical competence, and industry experience of each NAVIGANT staff who was directly involved in the preparation of the NCI Report.

D.T.E. 1-14   Please outline the qualities of a good forecasting model and show how the multiple regression analysis used by the Company (see p. 31 of the Company's filing) to forecast demand for gas satisfy these qualities.

D.T.E. 1-15   Please refer to the regression equations presented in DRI-WEFA's report (attachment 4, p. B.1 through p. B.56). Please,
(a)   define LHS Mean;
(b)   explain the difference between the following statistics: D.W.(1), D.W. (2) and H. Please specify which of those statistics was used to test for autocorrelation in each regression equation;
(c)   define %RMSE, (is it the root mean square error?). Please state what the Company uses %RMSE for;
(d)   what was the computer software used to estimate the regressions? What version?
(e)   indicate the level of statistical significance of the estimates selected by the Company to determine whether or not an independent variable has explanatory power;
(f)   state the underlying assumptions of the methods used by the Company to estimate the equations (Ordinary Least Squares and Cochrane-Orcutt), and explain how the Company tested these assumptions to ensure that none of them is violated. Please, provide evidence to support your answer;
(g)   specify which tests were performed in the regression analyses to detect multicollinearity in the data and to detect heteroskedasticity. Please, provide evidence in support of your answers;
(h)   compute and present the correlation matrix among all independent variables for every regression equation;
(i)   provide the standard deviations of the estimates in every regression model;

D.T.E. 1-16   Please refer to the regression equations presented in DRI-WEFA's report (attachment 4, p. B.1 through p. B.56). It is stated that these regressions produced excellent and solid statistical results, including high R^2 and adjusted R^2 (see p. 43, p. 45, p. 47, p. 48, p. 49 and p. 51 of the Company's filing). In this regard:
(a)   please define R^2 and adjusted R^2 and provide the formula used by the software to compute both for each regression equation;
(b)   discuss under which conditions the breakdown of the total variation into the "explained" and "unexplained" variations allows meaningful interpretation of the R^2 and adjusted R^2 . Are those conditions met by all of the regression equations? Please explain;
(c)   compute and present for every regression equation with no constant term

an alternative measure of R^2, in which the total variation and the "explained" variations of the dependable variable are measured as deviations from zero rather than their means. Regression equations with no constant term are in the following pages, B.11, B.25, B. 39, B53, B12, B 26, B40, B.54, B.5, B.19, B.33, B.47, B.14, B.28, B.42, B.3, B.2, B.4, B.17, B.16, B.18, B.31, B.30, B.32, B.45, B.44, B.46, B.7, B.6, B.8, B.20, B.22, B.36, B 50. Please, provide the software printouts with those calculations.

D.T.E. 1-17   On p. 32, the Company states that the regression specifications that showed statistical significance, explained most of the variation in the dependent variable, presented logical causal relationships and provided logical forecasts were retained and presented in DRI-WEFA's report to the Company. In this regard, please,
(a)   discuss the statistics (e.g., F-statistics, t-statistics.....) and level of statistical significance (e.g., 1%, 5% or 10%......) used by the Company to determine whether a regression specification shows statistical significance or not;
(b)   what coefficient(s) (e.g., R^2, adjusted R^2...) were used by the Company to determine the explained variation in the dependent variable. Discuss the advantages and disadvantages using one or other;
(c)   discuss what the Company means by "logical forecasts" and how the Company determines when a forecast is logical and when it is not. Did the Company have to dismiss a forecast because it was illogical? If possible, please provide with examples of both logical and illogical forecasts;
(d)   discuss the rationale for keeping one independent variable as explanatory variable in the final and presented regression specifications. Is it the logical causal relationship(s) with the dependent variable? Is it the level of statistical significant of the estimates of the variable? Is it both? Please provide with examples.

D.T.E. 1-18   Regarding the forecast of the number of residential heating customers (see p. 43 of the Company's filing and Tables A.3 of DRI-WEFA's report), please:
(a)   present detailed calculations, using the regression equations, of the forecast of the number of residential heating customers for 2001-2006. Please, present those calculations on a spreadsheet with the following columns: year, error, a column per independent variable used in the forecast and finally, a column with the forecasted number of residential heating customers. Please present the calculations for each of the Company's divisions. Please make sure that the columns are labeled properly;
(b)   present detail calculations, using the regression equations, of the backcast of the number of residential heating customers for 1995-2000. Please present those calculations on a spreadsheet with the following columns: year, error, a column per each of the independent variable used in the backcasting, backcasted number of residential heating customers, actual number of residential heating customers and finally, a column with the backcasting intervals at 95% confidence level. Does the actual number of residential heating customers fall into that interval? Please, explain and present those calculation for each of the Company's

division.

D.T.E. 1-19   Please refer to the regression models "Residential Heating Sales" (see p. B.13, p.
                B.27, p. B.41 and p. B.55). Please,
                (a)   define the independent variable D97 (see p. B.13), and explain why the
                variable was included in the model. The estimate of this variable has a P-value of
                .155, what is the rationale for keeping that variable as an explanatory variable in
                the model? Is that variable used for forecasting residential heating sales?;
                (b)   define the independent variable "resharp"(see p. B.27) and explain the
                rationale for including that variable in the model;
                (c)   define the independent variable D95 (see p. B.41), and explain the
                rationale for including that variable in the model;
                (d)   define the independent variable D0006 (see p. B.55), and explain the
                rationale for including that variable in the model.

D.T.E. 1-20   Regarding the forecast of residential heating sales (see p. 44 of the Company's
                filing and Tables A.3 of DRI-WEFA's report), Please:
                (a)   present detail calculations, using the regression equations, of the forecast
                of residential heating sales for 2001-2006. Please present those calculations on a
                spreadsheet with the following columns: year, error, a column per independent
                variable used in the forecast and finally, a column with the forecasted residential
                heating sales. Please, present the calculations for each of the Company's
                divisions. Please, make sure that the columns are labeled properly;
                (b)   present detail calculations, using the regression equations, of the backcast
                of the annual residential heating sales for 1995-2000. Please present the
                calculations on a spreadsheet with the following columns: year, error, a column
                per each of the independent variable used in the backcasting, backcasted
                residential heating sales, actual residential heating sales and finally, a column
                with the backcasting intervals at 95% confidence level. Do the actual residential
                heating sales fall into that interval?. Please, explain and present those calculations
                for each of the Company's divisions;
                (c)   did the Company use the autocorrelation pattern found (Moving Average
                Error) in equation B.41 to forecast the annual residential heating sales in New
                Bedford?. Please, explain .
                (d)   present actual and backcasted monthly residential heating sales for 1995
                through 2000. Please, explain in detail how the monthly backcasting was
                performed.

D.T.E. 1-21   Please explain the discrepancies between the annual growth rate of residential
                heating customers over the forecast period, stated on p. 43 of this filing (1.28%)
                and the same stated on Table A.7 in DRI-WEFA's report in the attachment 4 of
                this filing (.71%).

D.T.E. 1-22   On p. 60 of the Company's filing, the Company notes that the forecast of gas load

for the new residential development in Plymouth County, Pine Hills, was provided by the Company's sales Department (see also Table V-4 on p. 61). In this regard:

(a)   discuss in detail how the Company's sales Department projected residential and commercial loads for Pine Hills for the forecast period. Please make sure to clarify the specific plans the projections were based on (e.g.; possibility for Pine Hills customers to become firm transportation customers, etc.);

(b)   please provide a measure of reliability of the Pine Hills load forecast;

(c)   discuss how the Company's sales Department forecasts the number of residential and commercial customers in Pine Hills. Please provide a measure of reliability of the forecast;

(d)   did the Company forecast the residential non-heating sales and residential non-heating customers for Pine Hills? Please explain. If yes, please provide with the forecast of sales, number of customers and a measure of reliability of those;

(e)   are the residential non-heating sales and number of customer forecast included in Tables A.5 (see DRI-WEFA Report, attachment 4 of the Company's filing)?.

D.T.E. 1-23   Please explain the following statement: "The gas price here is real gas price adjusted by efficiency" (see p. 7 of DRI-WEFA Report, attachment 4). In addition, please:

(a)   specify the deflator used to obtain the real gas price;

(b)   specify the sort of efficiency referred to in this statement;

(c)   discuss qualitatively and quantitatively how the real price was adjusted by efficiency

D.T.E. 1-24   Please discuss why the EDD data for the year 2004 in the four division are different from the other forecasted years (see Table A.1, attachment 4).

D.T.E. 1-25   Please refer to the regression models "Residential Non-Heating Sales" (see p. B.14, p. B.28, p. B.42 and p. B.56). Please,

(a)   define the independent variable D0006 (see p. B.14 and B.56), and explain the rationale for including that variable in the model. The estimate of this variable has an associated P-value of .063 in the Worcester division model (see p.B.56), what is the rationale for keeping that variable as an explanatory variable in the model? Is that variable used to forecast the aggregate sales?;

(b)   define the independent variable D9906 (see p. B.28 and B.42), and explain the rationale for including that variable in those models. The estimate of this variable has an associated P-value of .151 in the New Bedford model (see p.B.42), what is the rationale for keeping that variable as an explanatory variable in the model? Is that variable used to forecast residential non-heating sales?;

(c)   does the Company consider the estimates of the variable "nghhsz" (see p. B.42) statistically significant? Does the Company use that estimate to forecast the

residential non-heating sales in New Bedford?;

(d)   provide an explanation of why the Company did not include a constant term in the Cambridge, Framingham and New Bedford models (see p. B.14, B.28 and B. 42);

(e)   did the Company use the autocorrelation pattern found (First-order Autoregressive Errors) in all the equations to forecast the residential non-heating sales?. Please, explain;

(f)   present a table with the backcast of the annual residential non-heating sales for the period 1995-2000;

(g)   provide a measure of forecast reliability.

D.T.E. 1-26   Please refer to p. 45 and p. 46 of the Company's filing. Please clarify how the residential non-heating sales and the average usage per residential non-heating customer were developed? It is the forecasted sales divided by the forecasted number of customers used to derive the average usage per customers or did the Company forecast the average use per customer, and multiplied it by the forecasted number of customers to derive the forecasted residential non-heating sales?

D.T.E. 1-27   Please refer to Table A.7 (see attachment 4 of DRI-WEFA's report). Please elaborate on the zero MMBtu in the residential non-heating sales coming from DSM programs for the forecast years 2004, 2005 and 2006.

D.T.E. 1-28   Please discuss how the data for the independent variable "household size" was computed to make up the historical series and the forecasted series (see p. 45 and p. 8 of DRI-WEFA's report)

D.T.E. 1-29   Please define the term "Municipal Customer". Please provide a list of categories included in it, and list each municipal customer, the rate classification of each customer and the volumes consumed by each municipal customer for the period November, 2000 through October 31, 2001

D.T.E. 1-30   Please refer to the regression models "Municipal Customers" (see p. B.9, p. B.23, p. B.37 and p. B.51):

(a)   define the independent variable D99 (see p. B.23 and B.37), and explain the rationale for including that variable in the models;

(b)   define the independent variable D0006 (see p. B.23 and B.37), and explain the rationale for including that variable in the model;

(c)   define the independent variable D98 (see p. B.37), and explain the rationale for including that variable in the model;

(d)   define the independent variable D9906 (see p. B.51), and explain the rationale for including that variable in the model;

(e)   On p. 46 of the Company's filing, the Company states that "Households" were found to be significant in all divisions. Please, explain the P-value of .108 of

the number of households estimates in the Cambridge division (see also p. B.9);

(f)   does the Company use the estimates of the variable "cghh"(see p. B.9) to forecast the number of municipal customers in the Cambridge division? If yes, please, explain why.

(g)   did the Company use the autocorrelation pattern found (First-order Autoregressive Errors) in equation B.23 and B.37 to forecast the number of municipal customers in Framingham and New Bedford divisions, respectively?. Please, discuss;

(h)   present a table with the backcast of the annual municipal sales for the period 1995-2000;

(h)   provide a measure of the forecast reliability.

D.T.E. 1-31   Please refer to p. 46 of the Company's filing. The Company states that local government will need to increase its services in the form of schools and police/fire stations as the number of households increases in the region. Please, present evidence that the relationship between current number of households and current number of municipal customers is not "spurious".

D.T.E. 1-32   Please refer to the regression models "Municipal Sales" (see p. B.10, p. B.24, p. B.38 and p. B.52):

(a)   define the independent variable (d86+d87) (see p. B.10), and explain the rationale for including this variables in the model;

(b)   explain the rationale for including the variable D99 in the model (see p. B.10);

(c)   explain the rationale for including the variables D9906 and D98 in the model (see p. B.38);

(d)   define the independent variable D9899 (see p. B.24), and explain the rationale for including that variable in the model. The estimate of this variable has associated an associated P-value of .315, what is the rationale of keeping that variable as an explanatory variable in the model? Is that variable use to forecast the aggregate sales?;

(e)   explain the rationale for including the variable D98 in the model (see p. B.52). The estimate of this variable has an associated P-value of .168, what is the rationale for keeping that variable as an explanatory variable in the model? Is that variable use to forecast the municipal sales?

(f)   did the Company use the autocorrelation pattern found (Moving Average Error) in equation B.10 to forecast the municipal sales in Cambridge?. Please, discuss;

(g)   did the Company use the autocorrelation pattern found (First-order Autoregressive Errors) in equation B.24 and B.52 to forecast the municipal sales in Framingham and Worcester, respectively?. Please, discuss.

D.T.E. 1-33   Please define the terms "Commercial Customer" and "Industrial Customer".

D.T.E. 1-34   Please refer to the regression models "Commercial Customers" (see p. B.1, p.
B.15, p. B.29 and p. B.43),
(a)   does the Company consider the estimates of the variable "cgesrv"
statistically significant (see p. B.1)? Does the Company use the estimates of the
variable to forecast the number of commercial customers in Cambridge division?;
(b)   does the Company consider the estimates of the variable "ngesrv"
statistically significant (see p. B.29)? Does the Company use the estimates of the
variable to forecast the number of commercial customers in New Bedford
division?;
(c)   the regression model of the number of commercial customers in
Worcester division (see p. B.43) shows a H-statistics of 3.55. Does not that imply
the presence of positive autocorrelation in the model? If yes, please explain why
the Ordinary Least Squares procedure was still applied;
(d)   discuss why the regression analysis covers only 9 periods for the New
Bedford division (see p. B.29) while it covers 21 periods in the other divisions.

D.T.E. 1-35   Please refer to the regression models "Industrial Customers" (see p. B.5, p. B.19,
p. B.33 and p. B.47):
(a)   provide an explanation of why the Company did not include a constant
term in the models;
(b)   does the Company consider the estimates of the variable "cgemnt"
statistically significant (see p. B.5)? Does the Company use the estimates of that
variable to forecast the number of industrial customers in Cambridge division?;
(c)   does the Company consider the estimates of the variables "ngindcat" and
"ngemnt" statistically significant (see p. B.33)? Does the Company use those
estimates to forecast the number of industrial customers in New Bedford
division?;
(d)   does the Company consider the estimates of the variables "wremnt" and
"D9706" statistically significant (see p. B.47)? Does the Company use those
estimates to forecast the number of industrial customers in Worcester division?;
(e)   define the independent variable D97 and D98 (see p. B.19), and explain
the rationale for including that variable in the models;
(f)   define the independent variable D0006 (see p. B.33), and explain the
rationale to include that variable in the model;
(g)   define the independent variable D96 and D9706 (see p. B.47), and explain
the rationale for including those variables in the model. Were these estimates
considered statistically significant? Were these used to forecast the number of
industrial customers in Worcester division?.

D.T.E. 1-36   Please refer to the regression models "Commercial Sales, Firm Sales and Firm
Transportation" (see p. B.3, p. B.17, p. B.31 and p. B.45). Please,
(a)   define the independent variable D00 (see p. B.3), and explain the rationale
for including those variables in the model. The estimate of this variable has an
associated P-value of .075, what is the rationale for keeping that variable as an

explanatory variable in the model? Is that variable considered in developing the forecast?;

(b)   explain why the Company did not include a constant term in the models;

D.T.E. 1-37   Regarding the forecast of Commercial Sales, firm sales and firm transportation (see p. 48 of the Company's filing and Tables A.3 of DRI-WEFA's report),

(a)   present detailed calculations, using the regression equations, of the forecast of the commercial firm sales and firm transportation for 2001-2006. Please, present those calculations on a spreadsheet with the following columns: year, error, a column per independent variable used in the forecast, and finally, a column with the forecasted commercial firm sales and firm transportation. Please, present those calculations for each of the Company's divisions. Please, make sure that the columns are labeled properly;

(b)   present detailed calculations, using the regression equations, of the backcasting of the annual commercial firm sales and firm transportation for 1995-2000. Please, present those calculations on a spreadsheet with the following columns: year, error, a column for each of the independent variables used in the backcasting, actual commercial firm sales and firm transportation, backcasted commercial firm sales and firm transportation and finally, a column with the backcasting intervals at 95% confidence level. Does the actual commercial firm sales and firm transportation fall into that interval?. Please, explain and present those calculations for each of the Company's divisions;

(c)   did the Company use the autocorrelation pattern found (First-order Autoregressive Errors) in all the equations to forecast the commercial firm sales and firm transportation?. Please, discuss;

(d)   present actual and backcasted monthly commercial firm sales and firm transportation for 1995 through 2000. Please, explain in detail how the monthly backcasting was performed.

D.T.E. 1-38   Please refer to the regression models "Industrial Sales, Firm Sales and Firm Transportation" (see p. B.7, p. B.21, p. B.35 and p. B.49),

(a)   define the independent variable D97 (see p. B.3), and explain the rationale for including those variables in the model;

(b)   provide an explanation on why the Company did not include a constant term in the Cambridge Division model (see p. B.7);

(c)   define the independent variables D99, D9697 and D0006 (see p. B.21), and explain the rationale for including those variables in the model. What is the rationale for keeping those as explanatory variables in the model while having P-value greater than .05?;

(d)   define the independent variables D92 and D9697 (see p. B.35), and explain the rationale for including those variables in that model;

(e)   The regression equation of Worcester division (see p. B.49) presents DW(1) = 3.4234 and DW(2) = 0.6188. Does that imply the presence of autocorrelation?. If yes, please explain why the Ordinary Least Squares procedure

was still applied. If applicable, please reestimate that equation using appropriate econometric procedure.

D.T.E. 1-39   Regarding the forecast of Industrial Sales, firm sales and firm transportation (see p. 51 of the Company's filing and Tables A.3 of DRI-WEFA's report),
(a)   present detailed calculations, using the regression equations, to forecast the industrial firm sales and firm transportation for 2001-2006. Please, present those calculations on a spreadsheet with the following columns: year, error, a column per independent variable used in the forecast and finally, a column with the forecasted industrial firm sales and firm transportation. Please, present those calculations for each of the Company's divisions. Please, make sure that the columns are labeled properly;
(b)   present detailed calculations, using the regression equations, of the backcasting of the annual industrial firm sales and firm transportation for 1995-2000. Please, present those calculations on a spreadsheet with the following columns: year, error, a column per each of the independent variable used in the backcasting, actual industrial firm sales and firm transportation, backcasted industrial firm sales and firm transportation and finally, a column with the backcasting intervals at 95% confidence level. Does the actual number of residential heating customers fall into that interval?. Please, explain and present those calculations for each of the Company's divisions;
(c)   did the Company use the autocorrelation pattern found (First-order Autoregressive Errors) in all the equations to forecast the industrial firm and transportation sales?. Please, discuss;
(d)   present actual and backcasted monthly industrial firm sales and firm transportation for 1995 through 2000. Please, explain in detail how the monthly backcasting was performed.

D.T.E. 1-40   Please refer to the regression equations "Commercial Firm Sales Share" (see p. B.4, p. B.18, p. B.32 and p. B.46) and "Industrial Firm Sales Share" (see p. B.8, p. B.22, p. B.36 and p. B.50),
(a)   explain why the Company did not include a constant term in those equations;
(b)   discuss the reason for keeping the trend variable as explanatory variable in those equation when the P-values are greater than .05. Is the trend variable used to forecast commercial and industrial firm sales share? Please, discuss;
(c)   is it the dependable variable value of the aforementioned equations bounded by certain values? If yes, please justify the use of the Ordinary Least Squares (OLS) procedure to estimate those equations; If applicable reestimate those equations using appropriate econometric procedure;
(d)   please, present evidence that errors are not heteroskedastic (e.g., present results of the test for heteroskedasticity in errors for every regression equations. Please, specify the null hypothesis, statistics, degrees of freedom and level of statistical significance used in the testing. Please, comment on the results).

D.T.E. 1-41   Regarding the forecast of Commercial Firm Sales Share (see p. 49 of the
                Company's filing and Tables A.3 of DRI-WEFA's report),
                (a)   present detailed calculations, using the regression equations, of the
                forecast of the commercial firm sales shares for 2001-2006. Please, present those
                calculations on a spreadsheet with the following columns: year, trend (if
                applicable), lagged firm sales share, error and finally the forecasted firm sales
                shares. Please present those calculations for each of the Company's divisions;
                (b)   present detailed calculations, using the regression equations, of the
                backcasting of the commercial firm sales shares for 1995-2000. Please, present
                those calculations on a spreadsheet with the following columns: year, trend (if
                applicable), lagged firm sales share, error, backcasted firm sales shares, actual
                firm sales shares, and finally, a column with the backcasting intervals at 95%
                confidence level. Do the actual firm sales shares fall into that interval?. Please,
                explain and present those calculations for each of the Company's division;
                (c)   present actual and backcasted <u>monthly</u> commercial firm sales shares for
                1995 through 2000. Please, explain in detail how the <u>monthly</u> backcasting was
                performed.

D.T.E. 1-42   Regarding the forecasting of Industrial Firm Sales Share (see p. 51 of the
                Company's filing and Tables A.3 of DRI-WEFA's report),
                (a)   present detailed calculations, using the regression equations, of the
                forecast of the industrial firm sales shares for 2001-2006. Please, present the
                calculations on a spreadsheet with the following columns: year, trend (if
                applicable), lagged firm sales share, error and finally the forecasted firm sales
                shares. Please present those calculation for each of the Company's divisions;
                (b)   present detailed calculations, using the regression equations, of the
                backcasting of the <u>annual</u> industrial firm sales shares for 1995-2000. Please,
                present the calculations on a spreadsheet with the following columns: year, trend
                (if applicable), lagged firm sales share, error, backcasted firm sales shares, actual
                firm sales shares, and finally, a column with the backcasting intervals at 95%
                confidence level. Does the actual firm sales market shares fall into that interval?.
                Please, explain and present those calculations for each of the Company's
                divisions;
                (c)   present actual and backcasted <u>monthly</u> industrial firm sales share for 1995
                through 2000. Please, explain in detail how the <u>monthly</u> backcasting was
                performed.
                (d)   present the results of the test for heteroskedasticity in errors for every
                regression equation. Please, specify the null hypothesis, statistics, degrees of
                freedom and level of statistical significance used in the testing. Please, comment
                on the results.

D.T.E. 1-43   Please explain how the Company forecasted the number of commercial firm sales
                and commercial firm transportation customers (see Table A.7 of DRI-WEFA's
                report).

D.T.E. 1-44   Please refer to pages B2, B16, B.30 and B.44 and discuss how the Company used the commercial customers firm sales share for?

D.T.E. 1-45   Please refer to the regression models "Commercial Customers Firm Sales Share" (see p. B.2, p. B.16, p. B.30 and p. B.44) and "Industrial Customers Firm Sales Share" (see p. B.6, p. B.20, p. B.34 and p. B.48). Please,
(a)   explain why the Company did not include a constant term in the models (all except for the models stated in B.34 and B.48);
(b)   is the dependent variable value of the aforementioned equations bounded by certain values? If yes, please justify the use of the Ordinary Least Squares (OLS) procedure to estimate those equations; If applicable reestimate those equations using appropriate econometric procedure;
(c)   Once the appropriate econometric procedure has been applied, please provide, in a separate sheet, the commercial and industrial customer firm sales shares for the period 1996-2000 and the forecasted period 2001-2006 for every division;
(d)   Please define all the independent variables used in all those models. Please explain the rationale for including those in their corresponding models;
(e)   The regression equation of Worcester division (see p. B.44) presents an H = -3.0451 Does that imply the presence of autocorrelation?; If yes, please explain why the Ordinary Least Squares (OLS) was still applied. Please, if applicable, reestimate that equation using appropriate econometric procedure;
(f)   is the dependent variable value of the aforementioned equations bounded by certain values? If yes, please justify the use of the Ordinary Least Squares (OLS) procedure to estimate those equations; If applicable reestimate those equations using appropriate econometric procedure;
(g)   please, present evidence that errors are not heteroskedastic. (e.g., present results of the test for heteroskedasticity in errors for every regression equations. Please, specify the null hypothesis, statistics, degrees of freedom and level of statistical significance used in the testing. Please, comment on the results).

D.T.E. 1-46   Please provide detailed explanation on how the Company reached the conclusion that the number of commercial and industrial interruptible sales and interruptible transportation customers will remain the same over the forecast period (see p. 50 of this filing and Table A.7 of DRI-WEFA's report).

D.T.E. 1-47   Please discuss in detail how the forecast of commercial and industrial interruptible sales and interruptible transportation were calculated (see p. 50 of this filing and Table A.7 of DRI-WEFA's report).

D.T.E. 1-48   Please discuss the nature of the commercial "New Projects FT" and how the Company forecasts such sales for the period 2002 to 2006. (see p. 50 of this filing and Table A.7 of DRI-WEFA's report).

D.T.E. 1-49   Please discuss the nature of "New Projects FT" for every division and how the
                Company forecast the firm transportation sales for that category:
                (a)   Industrial New Projects FT (see Table A.3, Cambridge Division; DRI-
                WEFA's report);
                (b)   Commercial and Industrial New Projects FT (see Table A.4, Framingham
                Division, DRI-WEFA's report);
                (c)   Commercial New Projects FT (see Table A.5, New Bedford Division,
                DRI-WEFA's report);
                (d)   Commercial New Projects FT (see Table A.5, Worcester Division, DRI-
                WEFA's report).

D.T.E. 1-50   Please refer to p. 56 of the Company's filing. Please, explain how the Company
                computes the capacity-exempt load of 9,037 BBtu on a weather normalized basis
                from the "non-weather normalized" capacity-exempt load of 8,727 BBtu.

D.T.E. 1-51   Please discuss how the Company forecasts the MIT Load (see p. 37 of the
                Company's filing).

D.T.E. 1-52   Please provide a Table containing four columns: year; actual aggregate sales;
                forecasted aggregate sales; difference between actual and forecasted aggregate
                sales for the period 1995-2000. Please indicate the linear correlation coefficient
                between the actual and forecasted aggregate sales.

D.T.E. 1-53   Please refer to p. 40, Table IV-6: "DSM Accrued Savings". Discuss the
                methodology used by the Company to forecast the number of installed
                conservation measures and DSM savings throughout the forecast period and for
                every customer class.

D.T.E. 1-54   Please refer to p. 65 of the Company's filing and p. C of the DRI-WEFA's report.
                Did the Company test the sensitivity of its forecast by changing the projections of
                key economic and demographic variables used in the econometric forecasting
                models?

D.T.E. 1-55   How often and by whom, are forecast and supply plans reviewed prior to and
                after their submission to the Department?

D.T.E. 1-56   Please describe the level of training, technical competence, and industry
                experience of each Company employee who was directly involved in the
                formulation of the Company's forecast and supply plan.

D.T.E. 1-57   Please describe the level of training, technical competence, and industry
                experience of each DRI-WEFA staff who was directly involved in the preparation
                of the DRI-WEFA Report.

D.T.E. -1-58   How long has the Company used the SENDOUT linear optimization program for
                the evaluation and optimization of its supply and demand side options?

D.T.E. -1-59   How has the SENDOUT model preformed as compared to previous
                models used?

D.T.E. -1-60   Please give examples of the difference between running the resource mix module
                versus running the entire SENDOUT program, as referred to on page 71, and
                how this affects the final optimization outcome.

D.T.E. -1-61   Please provide a list of all constraining variables the Company incorporated into
                its current SENDOUT model. Within this response, please describe any
                weighting criteria that may have been assigned to those variables.

D.T.E. -1-62   Please discuss further how the Company's SENDOUT model accounts and
                adjusts for the purchase of spot gas.

D.T.E. -1-63   Please provide historical data, by month, for the past five heating seasons,
                detailing the costs incurred for any excess capacity, upstream and downstream,
                maintained by the Company above what was needed to provide service to its firm
                customers.

D.T.E. -1-64   If the Company identifies numerous resource options to run through the
                SENDOUT mix module, as referred to on page 71, what are the maximum
                amount of options that the program can handle?   How is the efficacy of the
                program affected by an increase/decrease in the number of options run?

D.T.E. -1-65   Please define the "total variable operational costs" that are used in the Company's
                SENDOUT analysis and how and from what sources this information is derived.

D.T.E. -1-66   Please define what is meant by a "proven global optimizer" as described in
                Attachment 7, page 4 .

D.T.E. -1-67   What are the advantages or disadvantages of using a five year "planning
                horizon"?

D.T.E. -1-68   Please list the potential suppliers that the Company would issue Requests for
                Proposals (RFPs) to if the need arises.

D.T.E. -1-69   Please define and explain the "Storage MDQ Ratchet" table included in
                Attachment 5, page 13.

D.T.E. -1-70   On page 73 of the Company's filing, NSTAR states that it considers a wide scope
                of potential resource options to satisfy its need for pipeline capacity , etc. and

then gives the examples of "sharing arrangements with industrial and electric generation facilities", please explain such arrangements and give reasons and examples.

D.T.E. -1-71   On page 77, of the Company's filing, NSTAR mentions Resource Insight and Synapse Energy Economics as the developers of the program used to estimate avoided costs. What expertise does Resource Insight and Synapse Energy Economics have in this area, other than the program utilized by the NSTAR companies? Please give examples.

D.T.E. -1-72   On page 77 please explain the term "market spillover".

D.T.E. -1-73   Please explain in detail the DSM programs, page 79, that are being offered to NSTAR small C&I customers, including the traditional program offered.

D.T.E. -1-74   Please define the "New England Customer Group", page 80, the groups mission , list the members and indicate how long it has been in existence.

D.T.E. -1-75   Please explain and define " contract demand charges were based on the AFT-1 rate schedule", as referred to on page 83.

D.T.E. -1-76   Please refer to page 86. The Company's "contract renewal decision making process", step 3. What degree of reliability, as far as projects relating to capacity, does the Company derive from the information provided by the current marketers and is the Company aware of the process the marketers are using to derive their information. Is there uniformity between marketers as far as processes used to provide capacity information?

D.T.E. -1-77   Referring to page 91 under the heading of Gas Supplies, please indicate the average number of proposals obtained by the Company when it requests proposals or a percentage.

D.T.E. -1-78   On page 91, discussing the "Request for Proposal" process the Company states, five areas for evaluation of proposals. In what priority are these areas considered? For what reasons?

D.T.E. -1-79   Please further explain in detail the asset management arrangement with Dynegy. How does it work? What benefits will the Company derive from it? Does the Company have experience with any other asset management companies? Also please provide copies of call contracts pertaining to the Dynegy agreement.

D.T.E. -1-80   Referring to page 94, how will any deviation, complete or partial, form the planned increases in pipeline capacity and gas supplies for the New England region effect the Company's further procurement to meet projected demands?

D.T.E. -1-81   Please refer to table VIII-3 on page 94, and tables G-22D pages 1 and 2. Please reconcile any discrepancies in the figure and information presented.

D.T.E. -1-82   Please define and further explain each element of the equation the Company uses, page 55, to forecast Firm Load.

D.T.E. -1-83   Please further define the elements that made up the Company's firm load, as represented on page 55.

D.T.E. -1-84   Please further define the elements that make up the Capacity Eligible Transportation Load as represented on page 56.

D.T.E. -1-85   Please give further detail as to the capacity- exempt load of 8,727 BBtu, equivalent normalized to 9,037 BBtu, such as customer make up.

D.T.E. - 1-86   The Capacity-Eligible Firm Transportation load, which is represented in Table V-3 on page 59, how is the percentage of growth from new projects being determined? What methods are being used to determine the cumulative New Customer Load?

D.T.E. -1-87   On page 59 the Company discusses the development of residential transportation service. Please discuss the percentage of residential transportation growth as to the Company's currently submitted forecast and supply plan and projections as to future residential transportation. Fully explain the source of your data.

D.T.E. -1-88   Referring to page 60, sales from the Pine Hills residential golf course. Why is this currently not included in the Company's econometric modeling? Do they intend to include it in the future? What date?

D.T.E. -1-89   Please provide supporting detailed information for the figures represented in Table V-4 on page 61 for the Pine Hills residential golf course community.

D.T.E. -1-90   Referring to Table V-5, please explain in year 2004 the Firm Sales of 3,260, Line Loss amount of 164, the Company Use figure of 8, MIT figure of 190, Capacity Eligible amount of 400 and the Firm Load for 2004 of 4,023, as compared to the other five years represented in the table.

D.T.E. -1-91   Referring to Table V-7, please explain in year 2004 the Firm Sales figure of 915, Line Loss amount of 44, the Company Use figure of 2, the Capacity Eligible amount of 80 and the Firm Load for 2004 of 1,042, as compared to the other five years represented in the table.

D.T.E. -1-92   Referring to Table V-9, please explain in year 2005 the Firm Sales figure of 1,100, Line Loss amount of 60, the Company Use figure of 2, the Capacity

Eligible amount of 276 and the Firm Load for 2005 of 1,440, as compared to the other five years represented in the table.

D.T.E.-1-93   Please provide the contract under which NSTAR receives commodity from Hopkinton LNG Corp.

D.T.E.-1-94   Please indicate how the per unit rates that NSTAR is charged for commodity purchased from Hopkinton LNG Corp. area developed. In the response please indicate which regulatory authorities review these rates.

D.T.E.-1-95   According to NSTAR's web page at http://www.nstaronline.com/index2.asp?lk=abut Hopkinton LNG Corp. is listed under unregulated subsidiaries. Please indicate whether this information is accurate.

D.T.E.-1-96   Please provide a schematic of the Hopkinton LNG Corp.'s facility showing all pipes that connect to the facility. In the response, please indicate: (a) which pipes are owned by Hopkinton LNG corp., (b) which facilities are owned by NSTAR, (c) which facilities are owned by another NSTAR subsidiary, and (d) who is the owner of any other facilities that may not have been accounted for. For each owner listed above, please indicate the regulatory authority, if any, that has jurisdiction over the facilities.

D.T.E.-1-97   Has Hopkinton LNG Corp. made LNG or gas sales to customers other than NSTAR since December 31, 1997. If yes, please indicate the facilities that were used to complete the sale, and indicate the ownership of these facilities.

D.T.E.-1-98   In the event that Hopkinton LNG has made sales to other utilities in Massachusetts or the region, please discuss how credits from such sales are returned to NSTAR' firm customers.